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20. A method for authenticating a data media storing data in order to prevent at least one of piracy, unauthorized access and unauthorized copying of said data media, wherein said media is impregnated with at least one predetermined tracing substance including a predetermined concentration of at least one of an isotope, a plurality of isotopes and a plurality of stable isotopes, to form at least one security marking used for at least one of tracking and authenticating said data media, said method comprising the steps of:

- (a) detecting the at least one security marking in said data media;
- (b) authenticating said data media responsive to said detecting step (a) using the at least one security marking; and
- (c) outputting said data stored on said data media as at least one of audio, video, audio data, video data and digital data substantially free of said at least one security marking when the data media has been successfully authenticated by said authenticating step (b).

21. The authenticating method according to claim 20, and further including the step of authenticating said data media via at least two different security markings, each of which

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successively must be authenticated before said data is finally
output via said outputting step (c).

22. The authenticating method according to claim 20, and
further including the step of authenticating said data media
over a plurality of interconnected computer networks comprising
at least one of a local network, global network and Internet.

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SECURITY MARKING SYSTEM AND METHOD FOR
MINIMIZING PIRATING OF DATA ON DATA MEDIA
INCLUDING COMPACT DISCS AND DIGITAL VERSATILE DISCS

RELATED APPLICATION

~~This application claims priority from U. S. provisional Application No. 60/091,036, filed June 29, 1998, which is incorporated herein by reference. This application is a divisional application of U.S. Application No. 09/448,409 filed November 23, 1999 which is a continuation of International Application No. PCT/US99/14621, filed June 29, 1999, which in turn claims priority from U.S. Provisional Application No. 60/091,036, filed June 29, 1998, each of which is incorporated herein by reference.~~

This application is also related to: U.S. Non-provisional Application entitled, "Data Disc Modulation for Minimizing Pirating and/or Unauthorized Copying and/or Unauthorized Access of/to Data on/from Data Media including Compact Discs and Digital Versatile Discs", filed May 20, 1999, Application No. 09/315,104—; U. S. Nonprovisional Application entitled, "Method for Minimizing Pirating and/or Unauthorized

Copying and/or Unauthorized Access of/to Data on/from Data Media including Compact Discs and Digital Versatile Discs, and System and Data Media for Same", filed May 20, 1999, Application No. 09/315,012———; and U. S. Nonprovisional Application entitled, "Method for Minimizing Pirating and/or Unauthorized Copying and/or Unauthorized Access of/to Data on/from Data Media including Compact Discs and Digital Versatile Discs, and System and Data Media for Same", filed May 20, 1999, Application No. 09/315,102———, all three of which are incorporated herein by reference.

FIELD OF INVENTION

This invention relates generally to anti-data pirating technology. More specifically, the invention relates to a method and system of marking data discs by introducing, into the polycarbonate material, a predetermined tracing substance known as a security marking during the manufacturing stage of the polycarbonate material. This marking technique is useful in tracking pirated data and/or sources, such as

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All disc dimensions, including those pertaining to pit and physical formations, which encode data, are defined in the CD standard. For example, specifications information on sampling frequency, quantization word length, data rate, error correction code, and modulation scheme are all defined in the standard. Properties of the optical system that reads data from the disc using a leaser beam are also defined in the standard. Moreover, basis specifications relevant to CD player design is located in the signal format specifications.

Referring to Prior Art Figure 2A and 2B, the physical characteristics of the compact disc surface structure are described. Each CD is less than 5 inches in diameter whose track thickness is essentially thinner than a hair and whose track length averages approximately 3 and a half miles. The innermost portion of the disc is a hole, with a diameter of 15 mm, that does not hold data. The hole provides a clamping area for the CD player to hold the CD firmly to the spindle motor shaft.

Data is recorded on a surface area of the disc that is 35.5 mm wide. A lead-in area rings the innermost data area, and a lead-out area rings the outermost area. Both lead-in and lead-out areas contain non-audio data used to control the CD player. Generally, a change in appearance in the reflective data surface of a disc marks the end of musical information.

A transparent plastic substrate comprises most of the CD's 1.2 mm thickness. Viewing a magnified portion of the CD surface, as shown in Prior Art Figure 2A and 2B, the top surface of the CD is covered with a very thin metal layer of generally aluminum, silver or gold.

Data is physically contained in pits impressed along the CD's top surface. Above this metalized pit surface and disc substrate lies another thin protective lacquer coating (10 to 30 micrometers). An identifying label (5 micrometers) is printed on top of the lacquer coating.

A system of mirrors and lenses sends a beam of laser light to read the data. A laser beam is applied to the underside of a CD and passes through the

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a conventional specification table for a conventional compact disc system.

Figures 2A and 2B shows a scale drawing of a conventional CD data surface.

Figure 3 shows a typical compact disc pit surface.

Figure 4 shows a diagram of a conventional pit track.

Figure 5 shows a conventional bump height on a CD surface.

Figure 6 illustrates three graphic presentations of a mass spectrum traced by a five-element galvanometer.

Figure 7 illustrates a block diagram of the overall distribution path of a polycarbonate product, such as a CD or DVD, from manufacture to distribution to a customer.

Figure 8 illustrates the hierarchical relationship and the number of entities involved in the overall distribution of a polycarbonate product from manufacture to distribution to a customer.